

## WHAT IS CLAIMED IS:

1. A permanent magnet having a resistivity of  $0.1 \Omega \cdot \text{cm}$  or more and consisting of a bonded magnet which comprises a magnet powder dispersed in a resin, the magnet powder comprising a magnetic powder coated with inorganic glass, and having an intrinsic coercive force of 5 KOe or more, a Curie point  $T_c$  of  $300^\circ\text{C}$  or more, and a particle diameter of the powder of  $150 \mu\text{m}$  or less.
2. The permanent magnet according to Claim 1, comprising the inorganic glass at a content of 10% by weight or less.
3. The permanent magnet according to Claim 2, wherein the magnet powder has an average particle diameter of 2.0 to  $50 \mu\text{m}$ .
4. The permanent magnet according to Claim 3, wherein the magnet powder has an average particle diameter of 2.5 to  $25 \mu\text{m}$  and a maximum particle diameter of  $50 \mu\text{m}$  or less.
5. The permanent magnet according to Claim 2, wherein the inorganic glass has a softening point of  $220^\circ\text{C}$  to  $500^\circ\text{C}$ .
6. The permanent magnet according to Claim 2, wherein a content of the resin is 20% by volume or more.
7. The permanent magnet according to Claim 2, wherein the magnet powder is a rare-earth magnet powder.
8. The permanent magnet according to Claim 2, wherein a molding compressibility is 20% or more.
9. The permanent magnet according to Claim 2, wherein the resistivity is  $1 \Omega \cdot \text{cm}$  or more.
10. The permanent magnet according to Claim 2, wherein the magnet powder has an average particle diameter of 2.5 to  $50 \mu\text{m}$ .

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11. The permanent magnet according to Claim 2, wherein the magnet powder has the intrinsic coercive force of 10 KOe or more, and the Curie point  $T_c$  of 500°C or more.

12. The permanent magnet according to Claim 11, wherein the inorganic glass has a softening point of 400°C to 550°C.

13. The permanent magnet according to Claim 11, wherein the content of the resin is 30% by volume or more.

14. The permanent magnet according to Claim 11, wherein the magnet powder is a rare-earth magnet powder.

15. The permanent magnet according to Claim 11, wherein the molding compressibility is 20% or more.

16. The permanent magnet according to Claim 11, wherein the resistivity is 1  $\Omega \cdot \text{cm}$  or more.

17. The permanent magnet according to Claim 2, wherein the total thickness is 10,000  $\mu\text{m}$  or less.

18. The permanent magnet according to Claim 17, wherein the total thickness is 500  $\mu\text{m}$  or less.

19. The permanent magnet according to Claim 2, wherein a magnetizing magnetic field is 2.5 T.

20. The permanent magnet according to Claim 2, wherein a center line average roughness  $R_a$  is 10  $\mu\text{m}$  or less.

21. The permanent magnet according to Claim 2, the permanent magnet being produced by die molding.

22. The permanent magnet according to Claim 2, the permanent magnet being produced by hot press.

23. The permanent magnet according to Claim 2, the permanent magnet being produced from a mixed coating of a resin and a magnet powder by a film making method, such as a doctor blade method and printing method.

24. The permanent magnet according to Claim 2, having a surface glossiness of 25% or more.

25. The permanent magnet according to Claim 2, wherein the resin is at least one selected from the group consisting of polypropylene resins, 6-nylon resins, 12-nylon resins, polyimide resins, polyethylene resins, and epoxy resins.

26. The permanent magnet according to Claim 2, wherein the resin is at least one selected from the group consisting of polyimide resins, poly(amide-imide) resins, epoxy resins, poly(phenylene sulfide) resins, silicone resins, polyester resins, aromatic polyamide resins, and liquid crystal polymers.

27. The permanent magnet according to Claim 7, wherein the magnet powder is a rare-earth magnet powder selected from the group consisting of SmCo, NdFeB, and SmFeN.

28. The permanent magnet according to Claim 27, wherein the magnet powder is a Sm-Co magnet.

29. The permanent magnet according to Claim 28, wherein the SmCo rare-earth magnet powder is an alloy powder represented by  $\text{Sm}(\text{Co}_{\text{bal}}\text{Fe}_{0.15 \text{ to } 0.25}\text{Cu}_{0.05 \text{ to } 0.06}\text{Zr}_{0.02 \text{ to } 0.03})_{7.0 \text{ to } 8.5}$ .

30. A magnetic core comprising a magnet for magnetic bias, wherein the magnet for magnetic bias being the permanent magnet according to Claim 1, and being arranged in the neighborhood of a magnetic gap in order to supply magnetic bias from both sides of the gap to the magnetic core, the magnetic core comprising at least one magnetic gap in a magnetic path.

31. A magnetic core comprising a magnet for magnetic bias, the magnet for magnetic bias being the permanent magnet according to Claim 17 and being arranged in the neighborhood of a magnetic gap in order to supply magnetic bias from both sides of the gap to the magnetic core, the magnetic core comprising at least one magnetic gap in a magnetic path, wherein the magnetic gap has a gap length of about 50 to 10,000  $\mu\text{m}$ .

32. The magnetic core comprising a magnet for magnetic bias according to Claim 31, wherein the magnetic gap has a gap length exceeding 500  $\mu\text{m}$ , the magnet for magnetic bias having a thickness corresponding to the magnetic gap length.

33. The magnetic core comprising a magnet for magnetic bias according to Claim 31, wherein the magnetic gap has a gap length of 500  $\mu\text{m}$  or less, the magnet for magnetic bias having a thickness corresponding to the magnetic gap length.

34. An inductor component comprising a magnet for magnetic bias according to Claim 31 and at least one coil having at least one turn, wherein said at least one coil is applied to the magnetic core comprising a magnet for magnetic bias according to Claim 31.

35. An inductor component comprising:

a magnetic core having at least one magnetic gap, each of which has a gap length of about 50 to 10,000  $\mu\text{m}$  in a magnetic path;

a magnet for magnetic bias arranged in the neighborhood of the magnetic gap in order to supply magnetic bias from both sides of the magnetic gap; and

a coil having at least one turn applied to the magnetic core, wherein:

the magnet for magnetic bias is a bonded magnet comprising a resin and a magnet powder dispersed in the resin and having a resistivity of 1  $\Omega\cdot\text{cm}$  or more;

the magnet powder comprising a rare-earth magnet powder having an intrinsic coercive force of 5 KOe or more, a Curie point of 300°C or more, a maximum particle diameter of 150  $\mu\text{m}$  or less, and an average particle diameter of 2 to 50  $\mu\text{m}$  and coated with inorganic glass; and

the rare-earth magnet powder is selected from the group consisting of a Sm-Co magnet powder, Nd-Fe-B magnet powder, and Sm-Fe-N magnet

powder.

36. The inductor component according to Claim 35, wherein the permanent magnet for magnetic bias is molded by die molding.

37. The inductor component according to Claim 36, wherein the permanent magnet for magnetic bias has a molding compressibility of 20% or more.

38. The inductor component according to Claim 35, wherein the surface of the permanent magnet for magnetic bias is coated with a heat-resistant resin or heat-resistant coating having a heat resistance temperature of 120°C or more.

39. The inductor component according to Claim 35, wherein the inorganic glass has a softening point of 220°C to 550°C.

40. The inductor component according to Claim 35, wherein the content of the inorganic glass is 10% by weight or less.

41. The inductor component according to Claim 35, wherein the content of the resin is 20% or more, the resin being at least one selected from the group consisting of polypropylene resins, 6-nylon resins, 12-nylon resins, polyimide resins, polyethylene resins, and epoxy resins.

42. An inductor component to be subjected to a solder reflow treatment, comprising:

a magnetic core having at least one magnetic gap each of which has a gap length of about 50 to 10,000  $\mu\text{m}$  in a magnetic path;

a magnet for magnetic bias arranged in the neighborhood of the magnetic gap in order to supply magnetic bias from both sides of the magnetic gap; and

a coil having at least one turn applied to the magnetic core, wherein:

the magnet for magnetic bias is a bonded magnet comprising a resin and a magnet powder dispersed in the resin and having a resistivity of 1  $\Omega\cdot\text{cm}$

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or more; and

the magnet powder comprises a Sm-Co rare-earth magnet powder having an intrinsic coercive force of 10 KOe or more, a Curie point of 500°C or more, a maximum particle diameter of 150 μm or less, and an average particle diameter of 2.5 to 50 μm and coated with inorganic glass.

43. The inductor component according to Claim 42, wherein the permanent magnet for magnetic bias is molded by die molding.

44. The inductor component according to Claim 43, wherein the permanent magnet for magnetic bias has a molding compressibility of 20% or more.

45. The inductor component according to Claim 42, wherein the surface of the permanent magnet for magnetic bias is coated with a heat-resistant resin or heat-resistant coating having a heat resistance temperature of 270°C or more.

46. The inductor component according to Claim 42, wherein the SmCo rare-earth magnet powder is an alloy powder represented by



47. The inductor component according to Claim 42, wherein the inorganic glass has a softening point of 220°C to 500°C.

48. The inductor component according to Claim 42, wherein the content of the inorganic glass is 10% by weight or less.

49. The inductor component according to Claim 42, wherein the content of the resin is 30% by volume or more, and the resin being at least one selected from the group consisting of polyimide resins, poly(amide-imide) resins, epoxy resins, poly(phenylene sulfide) resins, silicone resins, polyester resins, aromatic polyamide resins, and liquid crystal polymers.

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50. An inductor component comprising:

a magnetic core comprising at least one magnetic gap having a gap length of about 500  $\mu\text{m}$  or less in a magnetic path;

a magnet for magnetic bias arranged in the neighborhood of the magnetic gap in order to supply magnetic bias from both sides of the magnetic gap; and

a coil having at least one turn applied to the magnetic core, wherein:

the magnet for magnetic bias is a bonded magnet comprising a resin and a magnet powder dispersed in the resin and having a resistivity of 0.1  $\Omega\cdot\text{cm}$  or more and a thickness of 500  $\mu\text{m}$  or less;

the magnet powder comprises a rare-earth magnet powder having an intrinsic coercive force of 5 KOe or more, a Curie point of 300°C or more, a maximum particle diameter of 150  $\mu\text{m}$  or less, and an average particle diameter of 2.0 to 50  $\mu\text{m}$ ; and

the rare-earth magnet powder is selected from the group consisting of a Sm-Co magnet powder, Nd-Fe-B magnet powder, and Sm-Fe-N magnet powder, and is coated with inorganic glass.

51. The inductor component according to Claim 50, wherein the permanent magnet for magnetic bias is molded from a mixture of the resin and magnet powder by a film making method, such as a doctor blade method and printing method.

52. The inductor component according to Claim 50, wherein the permanent magnet for magnetic bias has a molding compressibility of 20% or more.

53. The inductor component according to Claim 50, wherein the surface of the permanent magnet for magnetic bias is coated with a heat-resistant resin or heat-resistant coating having a heat resistance temperature of 120°C or more.

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54. The inductor component according to Claim 50, wherein the inorganic glass has a softening point of 220°C to 500°C.

55. The inductor component according to Claim 50, wherein the content of the inorganic glass is 10% by weight or less in the permanent magnet.

56. The inductor component according to Claim 50, wherein the content of the resin is 20% or more, and the resin is at least one selected from the group consisting of polypropylene resins, 6-nylon resins, 12-nylon resins, polyimide resins, polyethylene resins, and epoxy resins.

57. An inductor component to be subjected to a solder reflow treatment, comprising:

a magnetic core having at least one magnetic gap each of which has a gap length of about 500  $\mu\text{m}$  or less in a magnetic path;

a magnet for magnetic bias arranged in the neighborhood of the magnetic gap in order to supply magnetic bias from both sides of the magnetic gap; and

a coil having at least one turn applied to the magnetic core, wherein:

the magnet for magnetic bias is a bonded magnet comprising a resin and a magnet powder dispersed in the resin and having a resistivity of 0.1  $\Omega\cdot\text{cm}$  or more and a thickness of 500  $\mu\text{m}$  or less; and

the magnet powder comprises a Sm-Co rare-earth magnet powder having an intrinsic coercive force of 10 KOe or more, a Curie point of 500°C or more, a maximum particle diameter of 150  $\mu\text{m}$  or less, and an average particle diameter of 2.5 to 50  $\mu\text{m}$  and coated with inorganic glass.

58. The inductor component according to Claim 57, wherein the permanent magnet for magnetic bias is molded from a mixture of the resin and magnet powder by a film making method, such as a doctor blade method and printing method.

59. The inductor component according to Claim 57, wherein the



permanent magnet for magnetic bias has a molding compressibility of 20% or more.

60. The inductor component according to Claim 57, wherein the inorganic glass has a softening point of 220°C to 500°C.

61. The inductor component according to Claim 57, wherein the content of the inorganic glass is 10% by weight or less in the permanent magnet.

62. The inductor component according to Claim 57, wherein the surface of the permanent magnet for magnetic bias is coated with a heat-resistant resin or heat-resistant coating having a heat resistance temperature of 270°C or more.

63. The inductor component according to Claim 57, wherein the SmCo rare-earth magnet powder is an alloy powder represented by  $\text{Sm}(\text{Co}_{\text{bal}}\text{Fe}_{0.15 \text{ to } 0.25}\text{Cu}_{0.05 \text{ to } 0.06}\text{Zr}_{0.02 \text{ to } 0.03})_{7.0 \text{ to } 8.5}$ .

64. The inductor component according to Claim 57, wherein the content of the resin is 30% by volume or more, the resin being at least one selected from the group consisting of polyimide resins, poly(amide-imide) resins, epoxy resins, poly(phenylene sulfide) resins, silicone resins, polyester resins, aromatic polyamide resins, and liquid crystal polymers.

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